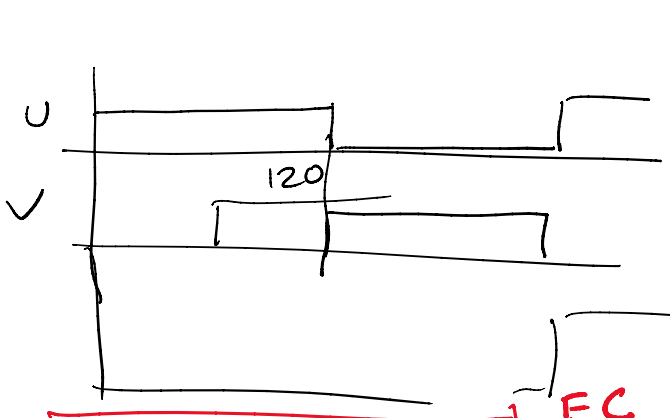
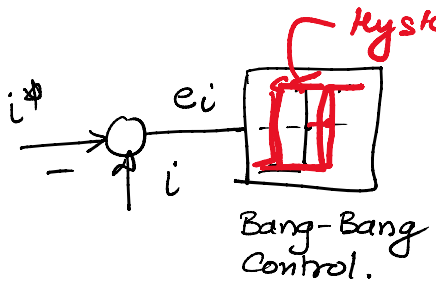
9Nov23

Thursday, November 9, 2023 6:04 PM

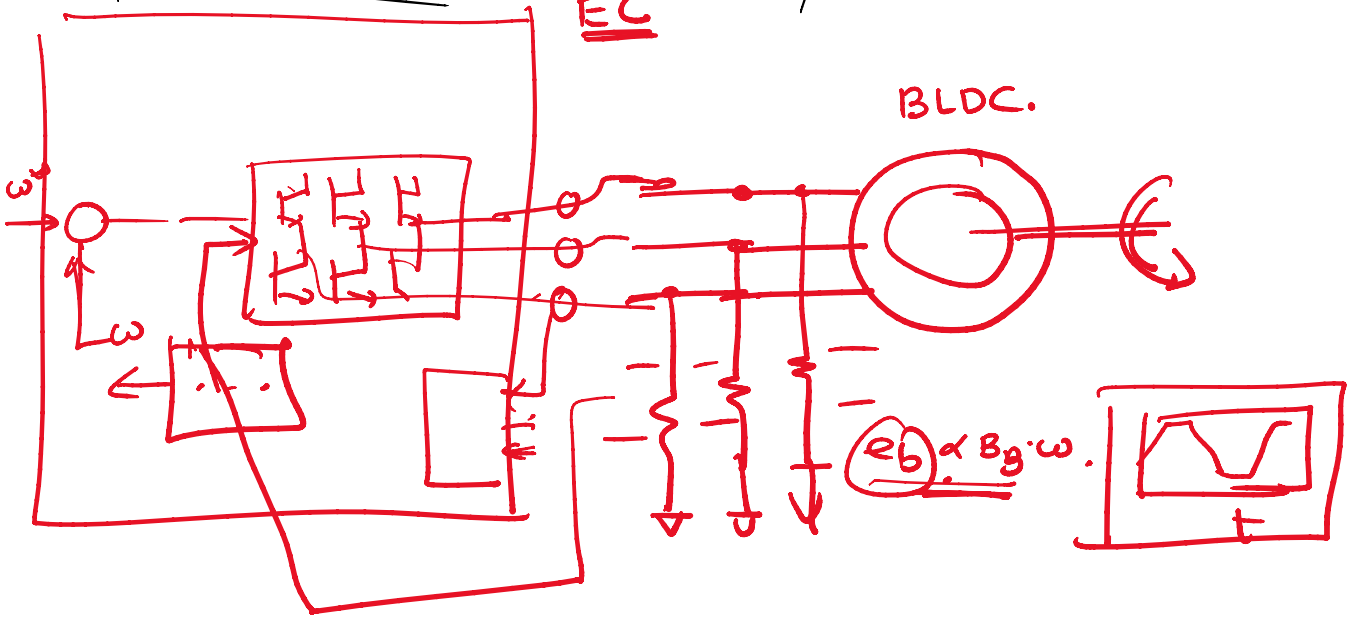
Today's class

1. BLDC motors and their control → BLDC - - - Drones
2. SRM principles ↔
3. Applications

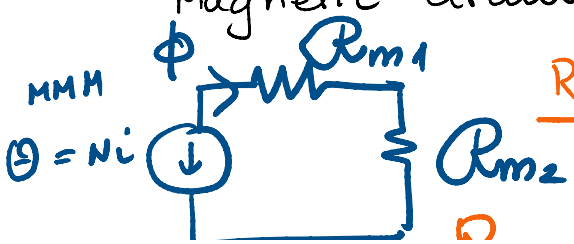




EC

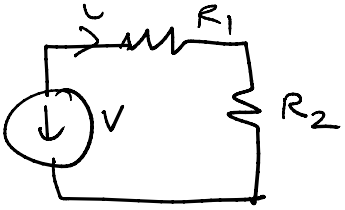


Magnetic circuit

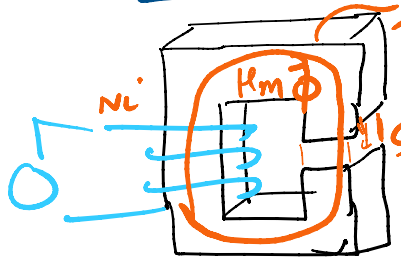


Reluctance

Electric circuit



$\Theta = Ni$ $\quad Rm_2$



$\phi = \frac{\Theta}{\Sigma \mathcal{R}}$

$Re = \rho \frac{l}{A}$

(H)

$\Sigma H.l = H_m l_m + H_g l_g = Ni = \Theta$

$B_g = \mu_0 \cdot \frac{Ni}{l_g}$

$B = \mu H$

$B_m = \mu_0 \cdot \mu_m \cdot H_m$

$B_g = \mu_0 \cdot H_g$

$B_m = B_g$

$\frac{\phi}{A_m} = \frac{\phi}{A_g}$

$R_{mg} >> R_m l_m$.

$\phi = \frac{Ni}{R_{mg} + R_{ml}} \approx \frac{Ni}{R_{mg}}$

$\mathcal{R} = \frac{l_g}{\mu A_c}$

$R_{mg} = \frac{Ni}{\phi} = \frac{Ni}{B_g \cdot A_g} = \frac{Ni \, l_g}{\mu_0 Ni A_g} = \frac{l_g}{\mu_0 A_g}$